

comprising a brushless DC electric motor with a rotor and a stator, an electronic actuation system, and a housing molded of plastics,

said electronic actuation system being surrounded by said housing, said housing supporting said electric motor, said housing having a bearing sleeve integrally molded with said housing for mounting said rotor of said electric motor, said rotor being an external rotor extending around said stator, said housing being assembled of two separate and distinct housing parts,

one of said housing parts comprising an upper housing part including said integrally molded bearing sleeve and supporting said electric motor,

the other of said housing parts comprising a lower housing part that faces said upper housing part and closes an open main side of said upper housing part,

said upper housing part having a generally cylindrical depression, said cylindrical depression surrounding said integrally molded bearing sleeve,

a circumferential edge of said rotor extending into said cylindrical depression of said upper housing part.

23. The drive unit according to claim 22, wherein said upper housing part has laterally projecting assembly tabs.

24. The drive unit according to claim 22, wherein said lower housing part and said upper housing part are connected with each other by latching means.

25. The drive unit according to claim 22, wherein said external rotor is generally pot-shaped and has an end face attached to a bearing shaft.

26. The drive unit according to claim 25, wherein said bearing shaft is rotatably mounted in said bearing sleeve by means of bearings placed into said bearing sleeve.

27. The drive unit according to claim 22, wherein said bearing sleeve is surrounded by a hollow-cylindrical stator of said electric motor.

28. The drive unit according to claim 27, wherein said bearing sleeve has a shoulder on which an inner circumferential edge of said stator bears.

29. The drive unit according to claim 22, wherein said stator is provided with axially projecting connection tags that extend through openings of said cylindrical depression of said upper housing part and that may be connected to a printed circuit board arranged in an interior of said housing.

30. The drive unit according to claim 22, wherein said electronic actuation system has a power part and a control part, said power part and said control part being mounted on separate circuit boards, a circuit board of said power part being a conductor structure stamped out of sheet metal encapsulated with plastic by means of injection-molding.

31. The drive unit according to claim 30, wherein said conductor structure of said power part has contact tags that project from an edge of said circuit board.

32. The drive unit according to claim 31, wherein said contact tags project from an outside surface of said housing and are surrounded by at least one plug collar molded with said housing.

33. The drive unit according to claim 30, wherein said circuit board of said power part has connection openings arranged in a circle, said connection tags of said stator being adapted to be inserted into said connection openings, said conductor structure of said power part having terminal parts adjacent to said connection openings.

34. The drive unit according to claim 30, wherein said circuit board of said power part has exposed metal surfaces of said conductor structure thermally contacted by power semiconductors of said electronic actuation system.

35. The drive unit according to claim 34, wherein said control part of said electronic actuation system comprises a circuit board spaced from and parallel to said circuit board of said power part, said power semiconductors having bent connection tags that extend through openings in said circuit board of said power part and are connected to said circuit board of said control part.

36. A drive unit for a fan in a vehicle, said drive unit comprising a brushless DC electric motor with a rotor and a stator, an electronic actuation system, and a housing molded of plastics,

said electronic actuation system being surrounded by said housing, said housing supporting said electric motor, said housing having air inlet openings for cooling of electronic components of said electronic actuation system and for cooling components of said electric motor,

said rotor being generally pot-shaped and having air outlet openings on an end face of said rotor remote from said air inlet openings of said housing.

37. The drive unit according to claim 36, wherein said housing is arranged on a suction side of said fan.

38. The drive unit according to claim 36, wherein said housing has an integrally molded bearing sleeve for mounting said rotor of said electric motor, said integrally molded

bearing sleeve having a guide channel for directing cooling air that enters said housing through said air inlet openings of said housing.

39. The drive unit according to claim 36, wherein said rotor is an external rotor that is generally pot-shaped and has an end face attached to a bearing shaft.

40. The drive unit according to claim 39, wherein said bearing shaft is rotatably mounted in said bearing sleeve by means of bearings placed into said bearing sleeve.

41. The drive unit according to claim 36, wherein said electronic actuation system has a power part and a control part, said power part and said control part being mounted on separate circuit boards, said air inlet openings of said housing being provided next to power semiconductors of said power part.